

I claim:

1) A method for preventing fraudulent card transactions in systems such as card payment and card access systems, both online and offline, while performing a card transaction via a computer or other device, said transaction typically associated with at least one activity performed by a user in transacting with a vendor, said vendor being a person, an entity, a computer or a machine and wherein said at least one activity is performed by the user from among a group of activities relating to acquiring of goods or services, and/or access to a computer, a network and/or virtual and physical sites, said method comprising:

providing the user with a physical card by a card issuer, said card being embodied in a portable, digitally recordable medium having stored thereon a user program that does not require storage of any component of said user program on a computer;

allocating to said physical card a unique identification number (ID), a password, and where applicable, an account number;

recording in a database associated with the card issuer for each card so provided, details of said ID and said password together with details of the user to whom the card has been provided;

initiating the card transaction in one of offline and online modes,

wherein during said offline mode, said card transaction is initiated by:

communicating a Cybercoupon as part of said card transaction, to the vendor in any manner not involving online communications,

and wherein during said online mode, said card transaction is initiated by:

connecting the computer online;

communicating a Cybercoupon as part of said card transaction, to the vendor via online communications;

receiving said Cybercoupon at the vendor, and processing said card transaction by the vendor;

transmitting by the vendor to the card issuer via a communication network, a request for authorization of the card transaction, if the vendor requires authorization by the card issuer before said vendor is entitled to give effect to said transaction;

receiving said request for authorization at the card issuer;  
processing, by the card issuer of said request for authorization in  
accordance with its standard criteria;  
authorizing the card transaction, if said Cybercoupon is determined  
to be valid and if the card issuer's standard criteria are met;  
or otherwise rejecting the card transaction.

2) The method of claim 1 wherein online intrusion during the card transaction is  
minimized during said online mode, after connecting the computer online, and after  
downloading a vendor's order form, by:

inserting, when a card number is required for the purpose of the transaction,  
said card in the computer and activating said user program;  
entering the password to gain access to said user program;  
generating said Cybercoupon;  
displaying, in optional fashion, advertising material contained in said user  
program;  
disconnecting automatically said card from the computer by ejecting the  
relevant drive or by other means, and;  
inserting said Cybercoupon on said order form in the position requiring a card  
number.

3) The method of claim 1 wherein, online intrusion during the card transaction is  
avoided during said online mode, by:

inserting, when a card number is required for the purpose of the transaction,  
said card in the computer and activating said user program;  
entering the password to gain access to said user program;  
generating said Cybercoupon;  
displaying, in optional fashion, advertising material contained in said user  
program;  
disconnecting said card from the computer by ejecting the relevant drive or by  
other means,  
connecting the computer online and downloading a vendor's order form;  
inserting said Cybercoupon on said order form in the position requiring a card  
number.

4) The method of claim 1 wherein said password may comprise at least a single word and wherein said user program is designed so that if an incorrect password is entered more than a predetermined number of times, the user gains entry to said user program and a fictitious Cybercoupon is generated having the appearance of a regular Cybercoupon but containing a code which indicates to the card issuer, that an irregular attempt has been made to enter the password, thus enabling the card issuer to take such steps as it considers appropriate

5) The method of claim 1, wherein said user program stored on said physical card comprises a number generator and an encryption program, which, on receiving the appropriate command, generates said one-time Cybercoupon in encrypted form, emulating a regular card number and containing encrypted information relating to the card ID and, where applicable, the monetary value of the transaction, the vendor identity and other information relating to the card transaction and wherein said processing by the card issuer includes decrypting said Cybercoupon, in a method comprising:

inserting said physical card in the computer and activating said card so as to display a login window on the computer screen;  
entering said password in said login window so as to activate said encryption program which opens a dialog box on the screen;  
entering where applicable, the currency and monetary value of the card transaction and the vendor's identity in relevant positions in said dialog box;  
generating said encrypted Cybercoupon and displaying it on a screen;  
communicating, in an offline transaction, said Cybercoupon to the vendor, in any manner not involving online communication;  
entering, in an online transaction, said Cybercoupon in said order form and communicating said order form to the vendor online; and  
receiving said order form by the vendor and processing said transaction in accordance with its usual procedures.

6) The method of claim 5, wherein the vendor's right to give effect to said card transaction is subject to authorization by the card issuer in accordance with a method comprising:

transmitting details of the proposed transaction by the vendor via the vendor's usual communication network to the card issuer with a request for authorization of said transaction;

receiving by a Filter Program associated with the card issuer of said request from said vendor for authorization of said transaction;

discriminating by said Filter Program between a request for authorization containing a Cybercoupon generated by the encrypted cybercoupon method and requests containing other card numbers;

forwarding by said Filter Program of a request for authorization which does not contain a Cybercoupon, to said Card Issuer's standard system for processing requests for authorization;

transmitting a request which contains a Cybercoupon to a Translator Program associated with said Filter Program;

decrypting of said Cybercoupon by said Translator Program to disclose the ID, the currency and monetary value of the transaction stipulated by the user, the identity of the vendor and whether or not said Cybercoupon contains an alert message indicating that an irregular attempt has been made to access said card;

replacing, in a message which contains said alert, said Cybercoupon with said account number associated with said ID and forwarding said request to the card issuer's standard system for processing said requests and marking the record in said database relating to the relevant ID as blocked and requiring further action by said card issuer in accordance with said card issuer's policy;

checking a Cybercoupon which does not contain said alert, to ascertain whether said Cybercoupon has been used previously within a prescribed period of time, whether it originated from a valid original card issued by said card issuer to said user and that, where applicable, the monetary value and vendor identity stipulated by said user coincide with the information in the request for authorization received from said vendor;

rejecting said request if said request fails any of said checks and notifying said vendor accordingly;

substituting, in a request which has passed all said checks, the relevant account number for said Cybercoupon and forwarding said request with said substituted account number, to the card issuer's standard system for processing card transactions;

retaining a record of all incoming requests which contained Cybercoupons and said relevant account numbers which have been passed to said card issuer's standard processing system;

processing of said request for authorization by said card issuer's standard processing system in accordance with said card issuer's usual criteria;

responding by said card issuer's said standard processing system to said Filter Program that said request has been rejected if said criteria have not been met or that said request has been accepted if said criteria have been met;

forwarding by the Filter Program to the vendor of said response with the card number unaltered if the original request did not contain a Cybercoupon;

forwarding of said response by the Filter Program to said Translator Program, if said response relates to a request that contained a Cybercoupon when received;

replacing, by said Translator Program of said permanent card number with said original Cybercoupon in respect of a request which was originally received containing a Cybercoupon;

transmitting said response containing said Cybercoupon from said Translator Program to said vendor.

transmitting said response by the vendor to the user.

7) The method of claim 1, wherein said card contains a quantity of Cybercodes, listed in a specific sequence, which sequence can be recycled when the last Cybercode in the list has been used, said list being associated with said card ID and said user program modified to generate a Cybercoupon by selecting one said Cybercode at a time from said list in said sequence and combining said Cybercode with said ID, said combination of ID and Cybercode constituting said Cybercoupon, said method comprising:

maintaining at the Card issuer, a database containing details of each card issued, the ID of said card, details of the user to whom the card has been issued, said account number associated with said ID, said list of Cybercodes in their specified sequence and said password;

inserting said physical card in the computer and activating said card so as to

display a login window on the computer screen;

entering said password in said login window so as to activate said user

program which opens a dialog box on the screen;

selecting by said program of the next unused Cybercode in its predetermined

sequence in said list contained on said card;

generating a Cybercoupon and displaying it on a screen;

communicating, in an offline transaction, said Cybercoupon to the vendor, in

any manner not involving online communication;

entering, in an online transaction, said Cybercoupon in a vendor's order form

and communicating said order form to the vendor online;

interacting, if authorization is required from the card issuer before the vendor is

entitled to give effect to the transaction, of said user program with said user's

email program or browser so as to send a notification to the card issuer,

notifying details of said transaction including the ID, the relevant Cybercode

used and where relevant, the currency, the monetary value of the transaction

and the identity of the vendor;

receiving by said card issuer of said notification from said user and entering of

information contained in said message received by the card issuer into a

database associated with said card issuer's system and marking in said

database of said Cybercode as contained in said notification as having been

used and awaiting a request for authorization from said vendor;

receiving said order by said vendor and processing said transaction in

accordance with said vendor's usual procedures.

8) The method of claim 7, wherein the vendor's right to give effect to said card transaction is subject to authorization by the card issuer in accordance with a method comprising:

transmitting details of the proposed transaction by the vendor via the vendor's usual communication network to the card issuer with a request for authorization of said transaction;

receiving of said request initially by a Filter Program at said Card Issuer's node;

differentiating by said Filter Program between requests containing Cybercoupons generated by said added Cybercode method and requests containing other card numbers;

directing by said Filter Program of a request which does not contain said Cybercoupon to the card issuer's standard processing system;

forwarding a request which contains said Cybercoupon to a Translator Program associated with said Filter Program;

detecting by said Translator Program of the ID contained in a request containing a Cybercoupon and by reference to said database at the card issuer linking said ID with the relevant account number associated with said ID;

checking by said Translator Program for the presence of an alert code in said Cybercoupon indicating that an irregular attempt has been made to enter the password;

substituting, if said alert is detected, said account number for said Cybercoupon, marking the record of said ID in said database as blocked pending further action by the card issuer and forwarding said request to the card issuer's standard processing system;

checking whether said Cybercode has been used previously in association with said ID and if so, rejecting the relevant request;

marking, if said Cybercode has not been previously used, said Cybercode as having been now used;

comparing the data stored in said database to ensure that said Cybercode is in the correct position in the predetermined sequence;

comparing that information contained in said request for authorization received from said vendor matches the information contained in said notification received from said user;

rejecting a request which fails any of said checks and notifying said vendor accordingly;

substituting, in a request which has passed all checks, the relevant account number for said Cybercoupon and transmitting said request with said substituted account number, to the card issuer's standard processing system;

retaining a record of all incoming requests which contained Cybercoupons and said relevant permanent account numbers which have been passed to the card issuer's standard processing system;

processing of said request for authorization by the card issuer's standard processing system in accordance with its usual criteria;

responding by said card issuer's said standard processing system to said Filter Program that said request has been rejected if said criteria have not been met or that said request has been accepted if said criteria have been met;

forwarding by the Filter Program to the vendor of said response with the card number unaltered if the original request did not contain a Cybercoupon;

forwarding by the Filter Program to said Translator Program of said response, if said response relates to a request that contained a Cybercoupon when received;

replacing, by said Translator Program of said permanent card number with said original Cybercoupon in respect of a request which was originally received containing a Cybercoupon;

transmitting said response containing said Cybercoupon by said Translator Program to the vendor;

transmitting said response to the user.

9) The method of claim 8, wherein said processing procedure contains a calculating means for statistically determining an acceptable tolerance in variation from said predetermined sequence of said Cybercode, taking into account such factors as the norm for the particular industry between the time and date on which a vendor receives an order and the time and date on which a Card Issuer receives the relevant request for validation from said vendor, and the value of the order, so that a transaction quoting an out of sequence Cybercode will be authorized with a statistically calculated level of safety, provided that such Cybercode falls within said calculated tolerance.



10) The method of claim 1 wherein the card contains a store for storage of encryption keys and a commonly available encryption algorithm for encrypting a Cybercoupon for use as a password in the form of a challenge, using symmetric keys such as, but not limited to, RC4 or DES, said challenge being used for controlling access to a computer in accordance with a method comprising:

- requesting by the user of permission to logon to a server;
- responding by said server with a challenge;
- extracting by said user program of a key from said store;
- generating a Cybercoupon by using said key in conjunction with said algorithm to encrypt said challenge;
- transmitting said Cybercoupon together with the card ID to the server;
- using the ID by the server to identify the key;
- using said key to decrypt said Cybercoupon;
- comparing the decrypted Cybercoupon with the original challenge; and
- authenticating the user if said response is identical to said challenge.

11) The method of claim 10 using asymmetric keys.

12) The method of claim 1 wherein the card contains a store for storage of encryption keys and a commonly available encryption algorithm for encrypting text which encrypted text can be stored securely on a local or remote computer or transmitted as a message electronically.

13) The method of claim 12 wherein said user program interacts with the user's email program to generate secure encrypted messages by email.

14) The method of claim 1, wherein said card takes the form of a combined magnetic stripe card and a smartcard in one unit, enabling said user to choose to use said card either as a conventional magnetic card or as a smartcard, said combined card containing a conventional magnetic stripe and any one of said user program described herein for generating Cybercoupons or passwords.

15) The method of claim 1 wherein said card contains a Dual Tone Multifrequency (DTMF) Generator in addition to said user program which interacts therewith in accordance with a conversion method so as to convert said Cybercoupon to an audio tone Cybercoupon, each digit in said Cybercoupon being converted to a specific audio frequency in accordance with international telephony standards, said conversion method comprising:

- inserting said card in a computer;
- generating a Cybercoupon;
- converting said Cybercoupon to an audio signal; and
- transmitting said Cybercoupon to the vendor directly modem to modem.

16) The method of claim 10 wherein said card contains a Dual Tone Multifrequency (DTMF) Generator in addition to said user program which interacts therewith in accordance with a conversion method so as to convert said Cybercoupon to an audio tone Cybercoupon, each digit in said Cybercoupon being converted to a specific audio frequency in accordance with international telephony standards, said conversion method comprising:

- generating a request for permission to logon to a server;
- converting said request to an audio signal recognizable by said server;
- transmitting said audio signal to the server;
- responding by said server with an audio challenge;
- converting said audio challenge to text;
- extracting by said user program of an encryption key from said store;
- using said encryption key to generate a Cybercoupon comprising said challenge encrypted using said algorithm;
- converting said Cybercoupon to an audio tone Cybercoupon and converting said ID to an audio signal;
- transmitting said audio tone Cybercoupon in response together with the audio card ID to the server;
- using the ID by the server to identify said encryption key;
- using said encryption key to decrypt said Cybercoupon;
- comparing the decrypted response with the original challenge;
- authenticating the user if said response is identical to said challenge.

transmitting said audio tone Cybercode to the vendor.

- 17) The method of claim 15 wherein said DTMF card is self-contained and operates without the use of a separate computer, said DTMF card including a keypad, a speaker and optionally a screen in addition to said user program and said DTMF generator, thus enabling a Cybercoupon to be generated, converted into audio tones and transmitted by placing the speaker on the card close to the microphone of the telephone or other means of audio communication.
- 18) The method of claims 15 wherein said DTMF-card is used in association with a telephone calling card provided by a telephony service provider, said Cybercoupon comprising the user's ID and PIN encrypted and converted to audio signals as described.
- 19) A method as recited in claim 1, whereby a POS Module is provided at an outlet equipped with commercial Point of Sale (POS) software, said module being designed to interact with said outlet's POS software enabling said POS Module to activate said card, read said Cybercoupon generated by said card and treat said Cybercoupon as a regular card number for processing in the usual manner adopted by said outlet.
- 20) A method for preventing fraudulent card transactions in systems such as card payment and card access systems, while performing an offline card transaction, said transaction typically associated with at least one activity performed by a user in transacting with a vendor, and wherein said at least one activity is performed by the user from among a group of activities relating to acquiring of goods or services, and/or access to a computer, a network and/or virtual and physical sites, said method comprising:
- providing the user with a physical card by a card issuer, said card being embodied in a non-digital portable medium,
  - allocating to said physical card at least a unique identification number (ID) and an account number;

recording in a database associated with the card issuer for each card so provided, details of said ID and said account number together with details of the user to whom the card has been provided;

allocating said card a quantity of Cybercodes listed in a predetermined sequence and in which an indicator in said ID indicates that said ID is invalid unless it has been modified by said Cybercode and wherein, the user selects one Cybercode at a time in accordance with said sequence and uses said Cybercode to create a Cybercoupon comprising said ID modified by the addition of said Cybercode as an extension to said ID or by inserting said Cybercode in said ID in replacement of the equivalent number of digits in a predetermined position of said ID, said Cybercoupon being used in lieu of the user's regular card number when initiating a card transaction;

initiating the offline card transaction by communicating said Cybercoupon as part of said transaction, to the vendor in any manner not involving online communications,

receiving said Cybercoupon at the vendor, and processing said Cybercoupon by the vendor;

transmitting by the vendor to the card issuer via a communication network, a request for authorization of the card transaction, if the vendor requires authorization by the card issuer before the vendor is entitled to give effect to said card transaction;

receiving said request for authorization at the card issuer; and

authorizing the card transaction, in accordance with an authorization method comprising:

- receiving of said request initially by a Filter Program at the card issuer;
- differentiating by said Filter Program between requests containing Cybercoupons generated by said added Cybercode method and requests containing other card numbers;
- directing by said Filter Program of a request which does not contain said Cybercoupon to the card issuer's standard processing system;
- forwarding a request which contains said Cybercoupon to a Translator Program associated with said Filter Program;

detecting by said Translator Program of the ID contained in a request containing a Cybercoupon and by reference to said database at the card issuer linking said ID with the relevant account number associated with said ID;

checking whether said Cybercode has been used previously in association with said ID and if so rejecting the relevant request;

marking, if said Cybercode has not been previously used, said Cybercode as having been now used;

comparing the data stored in said database to ensure that said Cybercode is in the correct position in the predetermined sequence;

determining that information contained in said request for authorization received from said vendor matches the information contained in said notification received from said user;

rejecting a request which fails any of said checks and notifying said vendor accordingly;

substituting, in a request which has passed all checks, the relevant account number for said Cybercoupon and transmitting said request with said substituted account number, to the card issuer's standard processing system;

retaining a record of all incoming requests which contained Cybercoupons and said relevant permanent account numbers which have been passed to the card issuer's standard processing system;

processing of said request for authorization by the card issuer's standard processing system in accordance with its standard criteria;

responding by said card issuer's said standard processing system to said Filter Program that said request has been rejected if said criteria have not been met;

responding by said card issuer's said standard processing system to said Filter Program that said request has been accepted if said criteria have been met;

forwarding by the Filter Program to the vendor of said response with the card number unaltered if the original request did not contain a Cybercoupon;

forwarding by the Filter Program to said Translator Program of said response, if said response relates to a request that contained a Cybercoupon when received;

replacing, by said Translator Program of said permanent card number with said original Cybercoupon in respect of a request which was originally received containing a Cybercoupon;

transmitting said response containing said Cybercoupon by said Translator Program to the vendor; and

transmitting said response to the user.

21) The method of claim 20 wherein the user is supplied with a unique supplementary code to be used in conjunction with each said Cybercode so that an unauthorized person who obtains access to said list of Cybercodes is unable to use said Cybercodes without knowledge of said supplementary code.

22) A system for preventing fraudulent card transactions in card payment and card access systems and the like, both online and offline, while performing a card transaction via a computer or other device, said transaction typically associated with at least one activity performed by a user in transacting with a vendor, said vendor being a person, an entity, a computer or a machine and wherein said at least one activity is performed by the user from among a group of activities relating to acquiring of goods or services, and/or access to a computer, a network and/or virtual and physical sites, said system comprising:

- a physical card provided by a card issuer, said card being embodied in a portable, digitally recordable medium having stored thereon a user program that does not require storage of any component of said user program on a computer, said physical card having allocated thereto at least a unique identification number (ID) and a password, and where applicable, an account number; and
- a database associated with the card issuer for each card having recorded therein, details of said ID, said password and where applicable, said account number, together with details of the user to whom the card has been provided;

wherein said card is used to perform a card transaction initiated in one of  
offline and online modes,

wherein during said offline mode, said card transaction is initiated by:

communicating a Cybercoupon as part of said transaction, to the  
vendor in any manner not involving online communications,

and wherein during said online mode, said card transaction is initiated by:

connecting the computer online;

communicating a Cybercoupon as part of said card transaction, to  
the vendor via online communications;

receiving said Cybercoupon at the vendor, and processing said  
card transaction by the vendor;

transmitting by the vendor to the card issuer via a communication  
network, a request for authorization of the card transaction, if  
the vendor requires authorization by the card issuer before said  
vendor is entitled to give effect to said transaction;

receiving said request for authorization at the card issuer;

processing, by the card issuer of said request for authorization in  
accordance with its standard criteria;

authorizing the card transaction, if said Cybercoupon is determined  
to be valid and if the card issuer's standard criteria are met;  
or otherwise rejecting the card transaction.